Commentary

iMedPub Journals
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Journal of Preventive Medicine
ISSN 2572-5483

2021
Vol.6 No.10:119

DOI: 10.36648/2572-5483.6.10.119

Odor due to Environmental Pollution and its Impact on Human Health

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Received: September 27, 2021, **Accepted:** October 11, 2021, **Published:** October 18, 2021

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Citation: Miller C (2021) Odor due to Environmental Pollution and its Impact on Human Health. J Prev Med Vol. 6 Iss No.10:119

Introduction

The sensation generated by an external stimuli and perceived by our sense of smell is referred to as odour. Bad odour might be defined as a sensory reaction that causes dissatisfaction or rejection. However, because what is pleasing or disagreeable relies on the individual and their olfactory detection capacity, this perception is highly subjective [1]. The presence of a poisonous material does not always signal the presence of a foul odour. Long-term exposure to an unpleasant odour, on the other hand, may trigger a reaction in the human body. As a result, exposure to "particularly disagreeable scents" might cause "direct physical reactions, particularly gastrointestinal symptoms."

The following gases are among the most common sources of odoriferous pollution

1. Hydrogen Sulphide (H_2S) is a gas that has a rotten-egg odour. Even at modest dosages, this has an adverse effect on human health, causing irritation of the eyes, nose, and throat.
2. Ammonia (NH3) is a colourless gas with a pungent odour that can cause skin burns in high doses. The decomposition of garbage and the usage of nitrogenous fertilisers are two common sources.
3. Volatile Organic Compounds (VOCs) are hydrocarbon-based gases that remain in a gaseous state at room temperature. Some of them, such as the sweet-smelling benzene, are extremely hazardous to human health.
4. Sulphur Dioxide (SO_2) is a gas with a pungent and unpleasant odour. At low concentrations, it is detectable (0.3-1.4 ppm). It can cause significant irritation and turn into sulphuric acid when it comes into touch with the mucous membranes of the eyes or nose (H_2SO_4).

Measurement of Odoriferous Pollution

Different procedures will be utilized based on the type of odour that needs to be measured.

Sensory Techniques: Data from people is used in sensory approaches. After all, the olfactory sense outperforms the detection capabilities of present technologies. They're especially good at detecting scents that are the consequence of a blend of diverse substances. Other aspects, such as hedonic tone (how good or poorly one smells something), strength, or frequency, might thus be considered when evaluating an aroma. Different techniques include dynamic olfactometry; field inspections and the register of residents in the area that detect the offensive odour [2].

Analytic Techniques: When measuring a simple odour or a single component that is indicative of a source, analytical procedures are applicable. Two types of analytical techniques are:

Gas chromatography-mass spectrometry is a technique for identifying and relating an odour to a molecule or a group of chemicals. However, as Suffet and Braithwaite point out, "merely identifying a set of chemicals in the air does not suggest which compounds contribute to odour problems."

The electronic nose "has a set of electronic chemical sensors with partial specificity, and a suitable pattern-recognition system, capable of distinguishing simple or complex scents" based on a scientific definition [3].

Odor Perception and Its Influences

Individuals might have a wide range of olfactory function and sensitivity. Significant variances in scent perception can be caused by factors like age, gender, disease status, and culture. In tests of olfactory threshold sensitivity, scent discrimination, and odour identification, for example, women have been reported to perform better than men. Similarly, olfactory function varies according to age. The loss of olfactory function is linked to ageing, and elderly people often do worse on scent sensitivity and recognition tests than younger people. Certain disorders can also affect odour perception; for example, Parkinson's disease, Alzheimer's disease, and multiple sclerosis can all affect the sense of smell. Odour perception can also be influenced by disorders

such as environmental chemosensory responsivity, multiple chemical sensitivity, and idiopathic environmental intolerance [4].

Individual historical experience with an odour, as well as age, gender, disease state, and culture, may all play a role in smell-induced reactions. These factors have an impact on olfactory function, but they will not be discussed in length in this paper. To account for these variations, respondents in most experimental research are asked to rank odours in terms of intensity and pleasantness before and after the session.

FIDOL: Frequency, Intensity, Duration, Offensiveness, and Location

FIDOL stands for Frequency, Intensity, Duration, Offensiveness, and Location, which are the key contributing variables in initiating an odour-induced response. Frequency refers to how frequently the population is exposed to odour; Intensity refers to the odour's strength; Duration refers to the length of the odour episode; Offensiveness/character refers to the odour quality (type of odour) and hedonic tone; and Location refers to the specified land use of the surrounding area and the community's tolerance (residential/rural location, schools, hospitals). These five parameters are frequently used together to assess the possible influence of odour on a population in the vicinity of an odour source [5].

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